Remarks

Claims 24 and 37 have been amended without any intention of disclaiming equivalents thereof. Upon entry of this paper, claims 24-48 and 104 will be pending and under consideration. Applicants have amended independent claims 24 and 37 to recite an *in vitro* method. Support for this amendment may be found throughout the application as filed, for example, in the Examples of the specification as filed. In addition, Applicants have amended independent claims 24 and 37 to recite nucleic acid-templated synthesis of a product that is not a nucleic acid. Support for this amendment may also be found throughout the application as filed, for example, in paragraphs 142 and 188 of the specification as filed. Applicants believe that the aforementioned amendments introduce no new matter. The outstanding rejections are addressed in the order in which they appear in the Office Action.

Double Patenting Rejections

According to sections 2-5 of the outstanding Office Action, certain claims presently stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting in view of certain claims in U.S. Patent Application Serial No. 10/101,030 (now U.S. Patent Number 7,070,928) in view of Sergeev, and in view of certain claims in U.S. Patent Application Serial Nos. 10/949,162 and 10/949,163. Applicants wish to inform the Examiner that U.S. Patent Application Serial No. 10/949,162 has been permitted to lapse in view of the filing of U.S. Patent Application Serial No. 11/586,851. Applicants respectfully request that these rejections be held in abeyance until allowable subject matter has been determined in this case. Once allowable subject matter has been identified, Applicants intend to file a Terminal Disclaimer, if appropriate.

Examiner's Claim Interpretation

According to the *Claim Interpretation* section on pages 5-6 of the Office Action, the Examiner has indicated that the term 'reactive unit' is being given the broadest reasonable interpretation in light of the specification and interprets the term to encompass "nucleic acid templated techniques which include ligation reactions between nucleotides." Applicants have

attempted to address this issue, stating in independent claims 24 and 37 that the reaction product is not a nucleic acid.

Rejection under 35 U.S.C. § 102(b) in view of Sergeev

According to sections 6 and 7 of the outstanding Office Action, claims 24, 30-37, 41-48 and 104 presently stand rejected under 35 U.S.C. § 102(b) as anticipated by Sergeev, WO 00/61775 ("Sergeev"). Applicants respectfully traverse this rejection to the extent that it is maintained over the claims, as amended, for the following reasons.

It is well settled that a "claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." See, MPEP § 2131. Applicants submit that Sergeev fails to meet this test.

Sergeev discloses a method of synthesizing a biologically active substance directly in the cells of living organisms containing specific RNA or DNA molecules. The method, as exemplified in Sergeev's Figure 1, discloses two or more oligonucleotides bound to biologically inactive precursors of biologically active substances. When the oligonucleotides hybridize to a third, different but specific RNA or DNA molecule *in vivo*, the hybridization to the different RNA or DNA molecule permits the biologically inactive precursors to interact with one another to make a biologically active form of the molecule.

As a threshold matter, independent claims 24 and 37, as now amended, and the claims depending therefrom, are all directed to an *in vitro* method of increasing reaction selectivity among a plurality of reactants in a nucleic acid-templated synthesis. In contrast to the claimed invention, Applicants submit that the method described in Sergeev relates to a synthetic approach that occurs *in vivo*.

In addition, the *in vitro* method of claim 24 requires, among other things, a template comprising a first reactive unit. Applicants submit that the Sergeev method (see, for example, Figure 1), does not use a template (e.g., the cellular RNA or DNA) comprising a first reactive unit. Furthermore, Applicants submit that Sergeev fails to teach or suggest an *in vitro* method that uses "a second transfer unit comprising a third reactive unit different from said second

reactive unit associated with a third oligonucleotide without an anti-codon sequence capable of annealing to said codon sequence," as required by claim 24.

Furthermore, Applicants submit that Sergeev fails to teach or suggest an *in vitro* method comprising a "third transfer unit comprising a third reactive unit associated with a fourth oligonucleotide sequence without an anti-codon sequence capable of annealing to said first codon sequence or said second codon sequence," as required by claim 37.

Accordingly, Applicants submit that Sergeev fails to teach or suggest each and every element of independent claims 24 and 37, and the claims depending therefrom. Because Sergeev fails to teach or suggest each and every element of claims 24, 30-37, 41-48 and 104 of the present invention, Applicants respectfully request that these rejections be reconsidered and withdrawn.

Rejection under 35 U.S.C. § 102(b) in view of Koster

According to section 8 of the outstanding Office Action, claims 24-40 presently stand rejected under 35 U.S.C. § 102(b) as anticipated by Koster *et al.*, U.S. Patent 6,043,031 ("Koster"). Applicants respectfully traverse this rejection to the extent that it is maintained over the claims, as amended, for the following reasons.

It is well settled that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Applicants submit that Koster fails to meet this test.

Koster discloses mass spectrophotometric processes for detecting a particular nucleic acid sequence in a sample (see column 3, lines 48-50). One approach, which the Office appears to be relying on, is presented in Figure 5 of Koster. In this Figure, it appears that the presence of a target sequence is identified via ligase chain reaction (LCR) where, for example, two primers (P1) and (P2), once annealed to the target, are ligated together to produce a product containing P1 and P2. P1 is coupled to a mass modifying functionality (M1) and a target capturing site (TCS1) so that the resulting product contains M1-TCS1-P1-P2 which can be detected by mass spectrometry.

At the outset, Applicants submit that the method of both claims 24 and 37, as amended, are directed to production of a reaction product that is not a nucleic acid. Applicants respectfully submit that Koster is directed to detection of nucleic acids and, as such, only describes production of reaction products that are nucleic acids, for example, nucleic acid production via an amplification step.

Moreover, Applicants submit that the method of claim 24 requires a template comprising a first reactive unit. Assuming that the Office is interpreting the DNA of Figure 5 to be the template, then Applicants submit that the Koster template does not comprise a "first reactive unit" that forms part of the reaction product.

Furthermore, claim 24, as amended, is directed to an *in vitro* method of increasing reaction selectivity among a plurality of reactants in a nucleic acid-templated synthesis. In this approach, such a result is achieved when a transfer unit containing an oligonucleotide with an anti-codon sequence permits it to anneal to the template to bring the reactive unit present in the transfer unit into reactive proximity with the reactive unit associated with the template. Under these conditions, covalent bond formation between the reactive units with oligonucleotides bound to each other is enhanced relative to a transfer unit lacking an anti-codon sequence. Applicants respectfully submit that such features are neither taught nor suggested in Koster. For example, Koster fails to teach or suggest selective covalent bond formation between particular reactive units.

The method of claim 37, which does not appear to be specifically rejected in the Office Action, also requires performing the method under conditions to provide reaction selectivity (see step (b) of claim 37). Applicants submit that in the claimed method covalent bond formation between two reactive units associated with oligonucleotides annealed to the template is enhanced relative to when a reactive unit, even though associated to an oligonucleotide, is not annealed to the template. Applicants submit that Koster fails to teach or suggest this type of reaction selectivity.

Rejections Under 35 U.S.C. § 103

According to sections 9-10 of the outstanding Office Action, claims 25-29 and 38-40 presently stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sergeev in view of Koster. Applicants respectfully traverse this rejection in view of the present amendments and following remarks.

Applicants submit that claims 25-29 and 38-40 depend from and thus incorporate the limitations of independent claims 24 and 37, respectively, neither of which stand rejected based on the combined teachings of Sergeev and Koster. It appears that the Office is relying on Koster to satisfy certain deficiencies in Sergeev. For example, the Office notes that Sergeev fails to teach "explicitly that the template units are associated with capturable moieties" and that Koster teaches such capturable moieties (see paragraph bridging pages 16 and 17 of the Office Action).

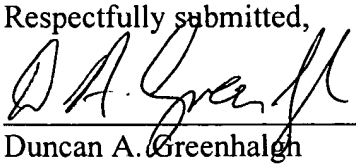
Although Applicants submit that there is no indication to modify the teachings of Sergeev, and that there is no reasonable expectation of being able to successfully modify the method of Sergeev as proposed by the Office, Applicants submit that the Sergeev method is still an *in vivo* method whereas the claimed invention is an *in vitro* method. Moreover, with regard to the rejection of claims 25-29, which depend from independent claim 24, Applicants submit that Sergeev and Koster alone or in combination fail to teach or suggest a template comprising a first reaction unit, as required by Applicants' claims 25-29 by dependency from claim 24.

Furthermore, with regard to claims 38-40 which depend from independent claim 37, Applicants submit that Sergeev and Koster alone or in combination fail to teach or suggest a "third transfer unit comprising a third reactive unit associated with a fourth oligonucleotide sequence without an anti-codon sequence capable of annealing to said first codon sequence or said second codon sequence," as required by claims 38-40 by dependency from claim 37. Accordingly, Applicants submit that the teachings of Sergeev modified by Koster fail to teach Applicants claimed invention when taken as a whole. In view of the foregoing, Applicants respectfully request that this rejection be reconsidered and withdrawn.

Conclusion

Applicants believe that, in the view of the above amendments and comments, the pending claims are in condition for allowance. Early favorable action is respectfully solicited. The Office is invited to contact the undersigned with any questions about this submission.

Respectfully submitted,



Date: December 22, 2006
Reg. No. 38,678

Duncan A. Greenhalgh
Attorney for Applicants
Goodwin Procter LLP
Exchange Place
Boston, Massachusetts 02109
Customer No. 051414

Tel. No.: (617) 570-1299
Fax No.: (617) 523-1231